

THE AUSTRALIAN ANTS OF THE GENUS DOLICHODERUS
(FORMICIDAE).

Subgenus HYPOCLINEA Mayr.

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In the *Genera Insectorum*, 1912, Emery records seven species and one variety of this genus as occurring in Australia. Since that time one subspecies and two varieties have been added, making a total of eleven forms at present known.

It is now proposed to add eight new species and to make a slight revision of those previously described. I have not seen the species described as *Dolichoderus turneri* Forel, from Queensland, but have included a rather free translation of the original description for the sake of completeness.

Hypoclinea flavipes Kirby, was omitted by Emery from the *Genera Insectorum*. The short description given by Kirby for this species is misleading and useless. It has been dealt with at the end of the paper. Forel has redescribed this ant as *Iridomyrmex rostrinotus*. Kirby's name, however, must take precedence.

So far as our Australian species are concerned this genus is badly defined. The characters given are suitable for the species of the group *scrobiculatus* Mayr, which resembles the European *Dolichoderus* (*Hypoclinea*) *quadripunctatus* Linn. In this group the thorax is not furnished with spines, but the posterior margin of the epinotum overhangs the declivity. In the group *scabridus* Roger, the epinotum does not overhang the declivity, but is furnished with two long spines, directed upward, outward and backward. In the group *doriae* Emery, both the epinotum and pronotum are furnished with spines. The node not spined.

The females of the *doriae* group are unknown. Forel has described the male of *doriae*; the description is, however, too imperfect to be of any use. In the *scabridus* group only the male is known. One female, but no male, is known in the *scrobiculatus* group.

For the use of Australian students, a brief generic description has been included. This deals with the workers only.

Very little is at present known concerning these ants. They are frequently met with on plants infested with Scale-insects and Frog-hoppers, being attracted to the exudations of these insects. The nests generally are crude. Usually they are represented by temporary structures at the foot of a small plant or shrub, or, more frequently, under loose bark on the ground; very rarely under logs or stones. In these situations the ants, usually, are found clustered in a large mass of from 100 to 200 specimens, scattering rapidly in all directions when disturbed. Although many such nests have been examined the female has not been seen, but males often are present, together with larvae and pupae.

The species of the *scrobiculatus* group are distributed widely throughout Australia, whilst the *scabridus* group is found mainly in Southern Australia. The *doriae* group is found in Queensland and New South Wales, one species ranging into Victoria.

Genus DOLICHODERUS Lund.

Ann. Sc. Nat., 23, p. 130, 1831; Forel, *Bull. Soc. Vaud. Sc. Nat.*, 15, p. 386, 1878; Emery, *Genera Insectorum*, Fasc., 137, p. 7, 1912.

Subgenus HYPOCLINEA Mayr.

Emery, *Genera Insectorum*, Fasc., 137, p. 10, 1912; *Hypoclinea* Mayr., *Verh. Zool-bot. Ver. Wien.*, 5, p. 377, 1855; *Ver. Zool-bot. Ges. Wien.*, 12, p.

704, 1862; Jour. Mus. Godeffroy, 12, p. 79, 1876; Emery, Bull. Soc. Ent. Ital., 26, p. 234, 1894.

Worker. Monomorphic. Head convex above. Maxillary palpi six, the labial palpi four segmented. Antennae with twelve segments. Clypeus convex, indented in the middle. Thorax variable, usually without spines, but in some species the epinotum is spined; in others both the epinotum and pronotum are spined. Node scale-like, inclined forward, convex or concave above, never spined.

Males and females too little known to be defined.

The following table will assist in determining the species:—

1. Pronotum and epinotum furnished with spines. 6—9.
2. Epinotum only furnished with spines. 10—15.
3. Thorax not furnished with spines. 16—25.
4. Epinotum overhanging the declivity. 16—22.
5. Epinotum not, or very slightly overhanging the declivity. 23—25.
6. Black. Spines of the pronotum as long as those of the epinotum. Node thin, concave above. *tristis* n.sp.
7. Black. Legs and spines red. Spines of the pronotum almost as long as those of the epinotum. Node straight on top. *doriae* Emery.
8. Mandibles, antennae, spines and legs reddish. Spines of the pronotum slender, directed more outward and downward, one-third shorter than those of the epinotum. *dentata* Forel.
9. Spines of the pronotum projecting laterally at a right angle, directed slightly upward. Top of the epinotal declivity striate.
. *extensispinosa* Forel
10. Legs red, tarsi and mandibles brown. Spines of the epinotum widely separated at the base. *scabridus* Roger.
11. As in *scabridus* Rog., but the antennae red. The spines more slender. var. *ruficornis* Sants.
12. Mandibles and legs red. Spines of the epinotum meeting at the base, slender and erect. *ypsilon* Forel.
13. As in *ypsilon* For., but entirely black, the spines longer and more slender. var. *nigra* Crawley.
14. As in *ypsilon* For., but the tibia, tarsi and anterior borders of the mandibles red. Spines short and thick. var. *rufotibialis* n.var.
15. Black. Head as long as broad. Spines of the epinotum long and slender, almost parallel. *angusticornis* n.sp.
16. Black. Mandibles and antennae reddish. Epinotal declivity finely transverse striate. Node thick, coarsely rugose. Pronotum flattened above. *scrobiculatus* Mayr.
17. Black. Mandibles, antennae and legs brown. Pronotum concave above in front. Node smooth and shining. *occidentalis* n.sp.
18. Red. Antennae, node and gaster black, mandibles and legs brown. Pronotum concave longitudinally in the middle. Node smooth.
. *nigricornis* n.sp.
19. As in *nigricornis* n.sp., but the head and antennae brown, legs reddish brown. Sculpture much finer. *formosus* n.sp.
20. Brownish red. Pronotum depressed above, smooth and shining. Epinotum only slightly overhanging the declivity. *clusor* Forel.
21. Red. Gaster yellowish red. Epinotum overhanging the declivity by fully half its length. Node thin. *reflexus* n.sp.
22. Brownish. Node thick, much broader than the epinotum.
. *turneri* Forel (1).
23. Head and gaster black, thorax red, legs brown. Finely reticulate and shining. Pronotum smooth, depressed in front. *australis* Andre.

24. Red. Gaster black, mandibles, antennae and legs yellow. Size small. *parvus* n.sp.
 25. Black. Pronotum smooth and shining. Gaster densely pubescent. *goudiei* n.sp.
 (1). From the description only.

DOLICHODERUS (HYPOCLINEA) DORIAE Emery.

Figs. 1 & 1a.

Ann. Mus. Nat. Civ. Stor. Genova, 24, p. 252, 1887, ♀; Forel, Rev. Suisse Zool., 10, p. 461, 1902, ♂; Genera Insect., 137, p. 12, 1912, ♀.

Worker. Length: 8-8.5 mm.

Black. Mandibles and antennae brown, legs and apex of the spines red.

Shining. Head and thorax irregularly rugose-punctate. Clypeus longitudinally rugose. Antennal fovea striate-reticulate. Node coarsely rugose. Gaster densely and microscopically punctate.

Hair yellow, erect, moderately long and abundant throughout, shorter and suberect on the antennae and legs. Pubescence very fine and adpressed on the antennae, long and abundant on the gaster, where it forms a dense yellowish clothing almost hiding the sculpture.

Head ovate, much broader behind than in front, broadest just behind the eyes, occipital border and sides strongly convex. Frontal carinae erect, diverging outward behind, separated by almost their length. Clypeus convex on top, the anterior border convex, with a slight excision at the middle. Eyes small, globular, placed at the middle of the sides. Scapes of the antennae extending beyond the occipital border by fully one-third of their length; first segment of the funiculus slightly longer than the second, the others subequal. Mandibles armed with eleven teeth. Thorax fully twice as long as broad. Pronotum twice as broad as long, furnished with two long horizontal spines in front, directed forward and very slightly outward; they are as long as their distance apart at their base. Mesonotum circular, convex above, in profile dome shaped, raised well above the pronotum. Epinotum longer than broad, triangular, furnished with two long, sharp, almost straight, spines directed upward and backward, at an angle of forty-five degrees; in profile the dorsum is straight, the declivity forming a right angle, concave at the bottom. Node scale-like, three times broader than long, concave in front, convex behind; in profile the anterior face straight, the dorsum and posterior face united in a curve. Gaster longer than broad, the anterior border concave below. Legs long and slender.

Hab.: Victoria, Fernshaw (W. Kershaw); Bogong High Plains and Ferntree Gully (F. E. Wilson). New South Wales, Blue Mountains (E. W. Ferguson); Sydney (H. P. Schrader); Katoomba (W. W. Froggatt); Lismore (C. F. Deuquet); Wahroonga (H. J. Carter). Queensland, Toowoomba (W. B. Barnard); Tambourne Mountain (—————); Stanthorpe (H. J. Carter, E. Sutton).

The description given by Forel for the male of this species is inadequate. It may apply to any species. There is nothing to indicate that the example is a male.

DOLICHODERUS (HYPOCLINEA) TRISTIS n.sp.

Figs. 2 & 2a.

Worker. Length: 8-8.8 mm.

Black. Legs blackish brown.

Shining. Head coarsely punctate. Clypeus more finely and sparsely punctate. Pronotum with large shallow punctures. Pronotum with similar punctures in front, almost effaced behind. The constriction and

anterior half of the epinotum almost smooth, posterior half punctate like the pronotum. Top of the node finely and irregularly rugose. Gaster densely and microscopically punctate.

Hair yellow, suberect, short and rather sparse throughout. Pubescence apparent only on the gaster where it forms a fine yellowish covering, rather thin, by no means hiding the sculpture.

Head a little longer than broad, broadest at the eyes, occipital border and sides strongly convex. Frontal carinae erect, separated by fully their length. Clypeus convex in the middle above, the anterior border convex, with a slight excision at the middle. Eyes globular, placed at the middle of the sides. Scapes of the antennae extending beyond the occipital border by one-third of their length; first segment of the funiculus fully one-third longer than the second, the others subequal. Masticatory border of the mandibles with nine denticles, the terminal border with nine large teeth. Thorax twice as long as broad. Pronotum twice as broad as long, furnished in front with two long slender spines directed forward, outward and downward, their length is equal to two-thirds of the distance apart at their base. Mesonotum longer than broad, broader in front than behind. Epinotum slightly longer than broad, furnished with two long, sharp, stout spines, directed outward and backward; in profile the spines are at an angle of thirty degrees, the dorsum flat, the declivity concave. Node thin on top, fully four times broader than long, concave laterally above, the anterior face feebly concave, the posterior convex; in profile flat in front, the posterior convex. Gaster much longer than broad. Legs long and slender.

Hab.: New South Wales: Bondi (E. Zeck, G. F. Hill); Cooma (A. Musgrave).

Near *D. (H.) doriae* Emery, from which it differs in colour, sculpture, form of the node and spines.

DOLICHODERUS (HYPOCLINEA) DENTATA Forel.

Figs. 3 & 3a.

D. doriae Emery; var. *dentata* Forel; Rev. Suisse Zool., 10, p. 461, 1902, ♀; Emery, Genera Insect., 137, p. 12, 1912.

Worker. Length: 7.7 mm.

Head and gaster black, thorax brown, the epinotum and spines red, mandibles, clypeus, antennae and legs yellowish red.

Shining. Head irregularly punctate-rugose. Clypeus finely striate-rugose longitudinally. Mandibles longitudinally striate and sparsely punctate. Pronotum and mesonotum coarsely punctate, the punctures large and shallow. The epinotum more shining, the punctures much wider apart. Top of the node irregularly rugose. Gaster microscopically reticulate-punctate.

Hair yellow, short and erect, very sparse, except on the gaster, very short on the antennae and legs. Pubescence apparent only on the gaster, where it forms a thin covering, by no means hiding the sculpture.

Head as long as broad, broadest at the eyes, the occipital border straight, the sides strongly convex, the angles rounded. Frontal carinae short, their distance apart equal to their length. Clypeus convex above, the anterior border convex, deeply excised at the middle. Eyes globular, placed at the middle of the sides. Scapes extending beyond the occipital border by fully one-third of their length; first segment of the funiculus one-fifth longer than the second, the others subequal. Mandibles finely denticulate on the masticatory border, the denticles increasing in size from the base to the apex; the terminal border furnished with ten sharp teeth.

Thorax two and three-quarter times longer than broad. Pronotum twice as broad as long, furnished in front with two long, very slender spines directed forward and outward, as long as their distance apart at the base; in profile directed forward and downward, curved towards the apex. Mesonotum circular; in profile feebly convex longitudinally, not so high as the pronotum, there is a strong sharp tooth on the side below. Epinotum longer than broad, furnished with two long, sharp, slender spines directed upward, backward and outward; in profile they are at an angle of about forty degrees, the dorsum straight, the declivity concave. Node barely three times broader than long, the anterior and posterior borders straight, the dorsum feebly concave. Gaster longer than broad, the anterior face concave below. Legs long and slender.

Hab.: Queensland, Mackay (G. Turner).

Differs from *D. (H.) doriae* Emery, by the colour, spines and node, as well as by the large tooth on the sides of the mesonotum.

DOLICHODERUS (HYPOCLINEA) *EXTENSISPINOSA* Forel.

Figs. 4 & 4a.

D. (H.) doriae Emery; race *extensispinosa* Forel, Arkiv. f. Zool., 16, p. 76, 1915, ♀.

Worker. Length: 8.5-8.8 mm.

Brown. Mandibles, antennae and legs reddish, epinotum and spines more or less reddish.

Shining. Head, thorax and dorsum of the node coarsely and irregularly punctate, clypeus more finely so. Mandibles finely reticulate, with sparse shallow punctures. Gaster microscopically punctate.

Hair yellow, erect, moderately long and abundant throughout. Pubescence yellow, apparent only on the gaster, where it forms a dense golden clothing, completely hiding the sculpture.

Head longer than broad, almost as broad in front as behind, occipital border and sides convex. Frontal carinae feebly diverging behind, their distance apart equal to their length. The anterior border of the clypeus convex, with a slight concave excision at the middle. Eyes globular, placed slightly behind the middle of the sides. Scapes extending beyond the occipital border by fully one-third of their length; first segment of the funiculus barely twice as long as the second, third as long as the second. Mandibles with the masticatory border finely denticulate, the terminal border with nine to ten sharp teeth. Thorax two and a quarter times longer than broad. Pronotum one-fourth broader than long, furnished with a long slender spine on each side in front, directed outward at a right angle and slightly upward. Mesonotum longer than broad; in profile somewhat saddle-shaped, convex in front, concave behind. Epinotum longer than broad, furnished with two long slender spines directed upward, backward and outward; in profile they are abruptly bent backward near the base, then rise at an angle of forty degrees, the dorsum straight, the declivity at an obtuse angle. Node twice as broad as long, the anterior face feebly concave, the posterior face straight, the sides and top convex. Gaster longer than broad, concave in front below. Legs long and slender.

Hab.: Queensland, Blackall (type locality, E. Mjoberg); Samford (H. Hacker).

The spines of the pronotum distinguish this from all the other species. In the three preceding species the spines are directed forward almost parallel with the thorax, whilst in the present species they project at right angle.

DOLICHODERUS (HYPOCLINEA) SCABRIDUS Roger.

Figs. 5 & 5a.

D. scabridus Roger, Berl. Ent. Zeitschr., 6, p. 244, 1862, ♀.*Polyrhachis joveolata* Lowne, The Entomologist, Lond., 2, p. 334, 1865, ♀.

♀; Jour. Mus. Godeffroy, 12, p. 79, 1876, ♀.

Dolichoderus (Hypoclinea) scabridus Roger; Emery, Genera Insect., 137, p. 13, 1912, ♀.*Worker.* Length: 6.2-6.8 mm.

Black. Legs red, spines of the epinotum reddish brown, mandibles and antennae brown, sometimes blackish brown.

Shining. Head, thorax and node coarsely and irregularly punctate, those on the mesonotum and epinotum larger and more scattered than on the head, finely and densely reticulate between the punctures. Clypeus rugose. Mandibles sparsely punctate. Gaster microscopically punctate.

Hair yellow, short and erect, moderately abundant throughout. Pubescence apparent only on the gaster, where it forms a distinct yellow clothing, but not hiding the sculpture.

Head slightly longer than broad, convex behind and on the sides. Frontal carinae erect, parallel, longer than their distance apart. The anterior border of the clypeus convex, feebly excised in the middle. Eyes globular, placed at the middle of the sides. Scapes extending beyond the occipital border by one-third of their length; first segment of the funiculus twice as long as the second and third. The masticatory border of the mandibles with eight denticles; the terminal border with nine or ten sharp teeth. Thorax twice as long as broad. Pronotum fully one-third broader than long, convex in front and on the sides. Mesonotum circular. Epinotum as long as broad, furnished with two long sharp spines, directed upward, outward and backward; in profile the dorsum convex, the declivity slightly concave, the spines rising at an angle of thirty degrees. Node twice as broad as long, the anterior border straight, the sides and posterior border convex; in profile parallel, the dorsum convex. Gaster concave in front below. Legs long and slender.

Male. Length: 4-5 mm.

Black. Mandibles, scapes and legs brown, metanotum red.

Subopaque. Head, pronotum, scutellum and mesonotum coarsely punctate, the punctures shallow and scattered, the spaces between them densely reticulate. Top of the epinotum finely reticulate, the declivity and node finely transverse striate. Gaster densely and finely punctate.

Hair yellow, erect, long and abundant throughout. Pubescence whitish, very fine and adpressed on the antennae and legs, longer and more abundant on the gaster.

Head longer than broad, broader behind than in front, the occipital border and sides strongly convex. Frontal carinae short and erect. Clypeus convex above, the anterior border strongly convex, with a feeble excision in the middle. Eyes large and convex, slightly in front of the middle, occupying one-third of the sides. Ocelli large and prominent. Scapes fully three times as long as the first segment of the funiculus and twice as long as the second. Mandibles large and triangular, finely and densely striate, furnished with numerous very fine sharp teeth. Pronotum hardly visible from above. Mesonotum large and convex, without traces of mayrian or parapsidal furrows. Scutellum convex. Epinotum short and broad, convex above; in profile as long as the declivity, the latter descending at an obtuse angle. Node thick, twice as broad as long, the anterior face and dorsum concave, the posterior face convex. Gaster longer than broad.

Cerci very long and thick. Genitalia partly retracted, the outer and middle processes long and slender, strongly curved downward. Legs long and slender. Wings subhyaline, with a slight smoky tinge.

Hab.: New South Wales: Sydney (W. W. Froggatt, -H. P. Schrader); Lismore (C. F. Deuquet); Albury (F. E. Wilson).

DOLICHODERUS (HYPOCLINEA) SCABRIDUS Roger, var. RUFICORNIS Sants.

Figs. 6 & 6a.

Bull. Soc. Ent. Fr., 10, p. 175, 1916, ♀.

Worker. Length: 5-5.5 mm.

Similar to *D. (H.) scabridus* Rog., from which it differs in colour and formation of the spines.

Brown. Mandibles, antennae and legs red, gaster black. Sculpture and pilosity identical. The spines of the epinotum shorter and less diverging; in profile they are barely as long as the dorsum of the epinotum; in *scabridus* they are at least one-fourth longer.

Male. Length: 4-4.5 mm.

Hab.: South Australia: Mount Lofty (A. H. Elston); Myponga (A. H. Elston). Victoria: Ararat (G. F. Hill); Mount William (J. Clark); Maldon (J. C. Goudie); Ferntree Gully (F. P. Spry); Cann River (J. Clark).

Differ from the male of *scabridus* only in having the mandibles, scapes and legs red. Wings slightly brownish.

DOLICHODERUS (HYPOCLINEA) YPSILON Forel.

Figs. 7 & 7a.

Dolichoderus scabridus Rog.; race *ypsilon* Forel, Rev. Suisse Zool., 10, p. 461, 1902.

Dolichoderus ypsilon Forel, Fauna Sudwest. Australia, 1, p. 284, 1907, ♀, ♂; Arkiv. f. Zool., 16, p. 76, 1915; Emery, Genera Insect., 137, p. 13, 1912, ♀, ♂.

Worker. Length: 5.3-5.8 mm.

Black. Legs and spines red, mandibles and coxae darker red.

Shining. Head punctate, the punctures shallow, the spaces between them finely reticulate. Pronotum and mesonotum with somewhat similar punctures, but more scattered. Top of the node coarsely rugose. Gaster microscopically punctate.

Hair yellow, long and erect, abundant throughout, shorter and suberect on the antennae and legs. Pubescence very fine and adpressed on the antennae, coxae and legs, longer and more abundant on the gaster, where it forms a yellowish clothing, not hiding the sculpture.

Head slightly longer than broad, the occipital border and sides convex. Frontal carinae short and parallel, as long as their distance apart. Clypeus with a distinct median groove from the base to the anterior border, the latter convex with a deep excision in the middle. Scapes extending beyond the occipital border by one-third of their length; first segment of the funiculus one-fourth longer than the second, and twice as long as the third. Eyes globular, placed at the middle of the sides. The masticatory border of the mandibles furnished with fine denticles; terminal border with strong sharp teeth. Thorax one and two-thirds times longer than broad. Pronotum one-third broader than long, convex above. Mesonotum slightly broader than long, feebly convex above. Epinotum short, as long as broad, furnished with two long sharp spines, directed upward, outward and backward, meeting at their base; in profile the dorsum short, almost fully occupied by the base of the spines, they are nearly straight and rise at an angle of sixty degrees, the declivity abrupt, longer than the basal face.

Node fully twice as broad as long, concave in front, convex behind, the dorsum straight; in profile parallel, to near the top, the dorsum and posterior face united in a convexity. Gaster longer than broad, concave in front below. Legs long and slender.

Male. Length: 4-4.8 mm.

Yellowish red, gaster darker, apical segments brown.

Opaque. Scutellum, epinotum, node and gaster more or less shining. Head and mesonotum very finely reticulate and with some very shallow scattered punctures.

Hair yellow, erect, abundant throughout. Pubescence whitish, hardly apparent, except on the antennae and legs.

Head almost as broad as long, strongly convex behind and on the sides. Frontal carinae short and erect. Clypeus convex above, produced in front. Eyes very large and convex, occupying a little more than half the sides of the head. Ocelli very large and globular. Scapes fully three times longer than the first segment of the funiculus, and almost twice as long as the second. Mandibles furnished with numerous small sharp teeth. Mesonotum overhanging and hiding the pronotum in front; mayrian furrows not apparent, parapsidal furrows sharply impressed. Scutellum almost circular, broader than long. Epinotum short and broad; in profile convex longitudinally, the declivity abrupt, as long as the dorsum. Node one and one-third times broader than long. Gaster much longer than broad. Cerci long and stout. Outer and middle processes of the genitalia slender, strongly curved downward at the points. Wings hyaline, with a slight smoky tinge. Legs long and slender.

Hab.: Western Australia. Widely distributed in the south-west corner from Geraldton to Albany.

In general appearance this species is much like *D. scabridus*, but is readily separated by its finer build and sculpture; the spines, too, are differently shaped.

DOLICHODERUS (HYPOCLINEA) YPSILON Forel, var. NIGRA Crawley.

Figs. 8 & 8a.

Ann. Mag. Nat. Hist., 9, 10, p. 25, 1922, ♀.

Worker. Length: 5.5-5.8 mm.

Differs from *D. ypsilon* Forel, as follows: Entirely black, legs blackish brown. Spines of the epinotum longer and more slender and more distinctly curved. The node a little smaller and sharper above. Sculpture and pilosity identical.

Hab.: Western Australia: Armadale, Mundaring and Perth (J. Clark).

DOLICHODERUS (HYPOCLINEA) YPSILON Forel, var. RUFOTIBIALIS n. var.

Figs. 9 & 9a.

Worker. Length: 6-6.5 mm.

Differs from *D. ypsilon* Forel, as follows:—

Apical margins of the mandibles, trochanters, knees, tibia and tarsi red; antennae and femora brown. The spines of the epinotum shorter and thicker, the dorsum of the epinotum longer. The mesonotum level, with the pronotum and epinotum forming almost a straight back. The tooth on the side of the mesonotum much less pronounced. The node thinner below, much more convex behind.

Hab.: Western Australia: Albany (J. Clark).

DOLICHODERUS (HYPOCLINEA) ANGUSTICORNIS n.sp.

Figs. 10 & 10a.

Worker. Length: 6.3-6.7 mm.

Black. Legs and apical half of the spines brownish red.

Subopaque. Mandibles shining with large scattered punctures. Head coarsely punctate-rugose. Clypeus longitudinally rugose. Thorax with very large shallow punctures, densely reticulate between and in the punctures. Epinotal declivity shining, finely transverse striate. Node strongly striate transversely behind. Gaster densely and microscopically punctate.

Hair yellow, erect, long and abundant throughout, shorter and suberect on the legs. Pubescence not apparent, except on the gaster, where it forms a yellowish, rather coarse covering, hiding the sculpture.

Head as long as broad, broader behind than in front, the occipital border straight, the sides strongly convex. Frontal carinae separated by fully their length. Clypeus convex above, the anterior border feebly convex, almost straight, not excised in the middle. Eyes globular, placed at the middle of the sides. Scapes extending beyond the occipital border by one-third of their length; first segment of the funiculus one-third longer than the second, the others subequal. The masticatory border of the mandibles feebly denticulate; the terminal border with seven or eight strong sharp teeth. Thorax one and one-third times longer than broad. Pronotum almost one and three-quarter times broader than long, convex above. Mesonotum circular, convex above, there is a strong sharp tooth on the sides below. Epinotum as broad as long, furnished with two long slender, almost parallel spines, feebly directed outward above; in profile the spines rise at an angle of seventy-five degrees, their base occupying almost all the surface of the epinotum, the declivity abrupt and straight, one and a half times longer than the dorsum. Node three times broader than long, rather deeply concave on top, the anterior face concave, the posterior convex. Gaster longer than broad, concave in front below. Legs long and slender.

Hab.: Western Australia: Burracoppin (G. Cadd).

Resembles *D. ypsilon* Forel, in colour, but is readily separated by the form of the head, spines and node.

DOLICHODERUS (HYPOCLINEA) SCROBICULATUS MAYR.

Figs. 11 & 11a.

Emery. *Genera Insect.*, 137, p. 13, 1912, ♀.

Hypoclinea scrobiculata Mayr, *Jour. Mus. Godeffroy*, 12, p. 79 & 80, 1876, ♀.

Worker. Length: 4.5-4.8 mm.

Black, the thorax sometimes brownish black, mandibles and scapes red, funiculus and legs darker.

Shining. Head, thorax and node coarsely punctate. Clypeus more striate-rugose. Mandibles smooth, with some large shallow punctures. Gaster microscopically punctate.

Hair yellow, erect, long and abundant throughout, shorter on the antennae and legs. Pubescence apparent only on the gaster, where it forms a thin yellowish covering, not hiding the sculpture.

Head longer than broad, the occipital border feebly, and the sides strongly, convex. Frontal carinae dilated at the middle, as long as their distance apart. Clypeus convex above, the anterior border convex, with a deep and wide excision in the middle. Eyes globular, placed slightly behind the middle of the sides. Scapes extending beyond the occipital border by one-fourth of their length; first segment of the funiculus one third longer

than the second and third. The masticatory border of the mandibles finely denticulate, the terminal border with ten or twelve sharp teeth. Thorax one and a half times longer than broad. Pronotum almost three times broader than long, feebly convex above. Mesonotum convex above. Epinotum as long as broad, the sides and posterior border feebly convex; in profile the dorsum strongly convex longitudinally, much higher in front than behind, overhanging the declivity, the latter slightly longer than the dorsum and strongly concave. Node barely twice as broad as long, the anterior face feebly, the posterior face strongly, convex; in profile parallel to near the top, where both faces are convex, meeting and forming a ridge on the dorsum. Gaster concave in front below. Legs robust.

Hab.: Queensland: Brisbane (H. Hacker); Bribie Island (H. Hacker); Toowoomba (W. B. Barnard); Rockhampton (H. J. Carter). New South Wales: Sydney (W. W. Froggatt).

DOLICHODERUS (HYPOCLINEA) TURNERI Forel.

Rev. Suisse Zool., 10, p. 462, 1902, ♀.

Emery, Genera Insect., 137, p. 13, 1912, ♀.

Worker. Length: 3.4-4.5 mm.

Head triangular or almost cordiform, strongly reduced in front, with strongly convex sides, broadly emarginate behind. Mandibles large, smooth and shining, punctate, armed in front with one large and three small teeth, and a series of very small denticles, about eight or nine. Clypeus impressed longitudinally on its anterior half. Scapes pass the occiput a little. Eyes placed behind the middle, at the posterior two-fifths. Pronotum broad, bluntly produced. Sutures of the thorax strongly impressed; in profile forming three successive convexities of almost equal length, situated on the same horizontal plane, feebly sub-bordered. The basal face of the epinotum almost square, terminated by a sharp ridge overhanging the declivity, the latter high and deeply concave, the superior half of the sides marginate (shape analogous to that of *D. taschenbergi*, *mariae* and *quadripunctatus*). Node very thick, much broader than the epinotum, rounded above, about four times broader than thick. Abdomen large, slightly concave in front.

Head and thorax strongly, coarsely and irregularly reticulate-punctate, node a little more feebly so; bottom of the punctures shining and feebly sculptured. Face of the declivity feebly and transversely striate. Abdomen very finely and densely punctate, subopaque, members less densely punctate, rather shining. An erect pilosity, fine and pointed, spread on the body, shorter and suberect on the antennae and legs. Pubescence greyish yellow, moderately long on the abdomen, node, antennae and legs, partly hiding the sculpture on the abdomen.

Head thorax and anterior legs reddish brown. Mandibles, antennae node, abdomen and the rest of the legs yellow russet or brownish.

The whole insect short and massive.

Hab.: Queensland: Mackay (G. Turner).

I have not seen this species, but it appears to be very distinct from all the other known forms.

DOLICHODERUS (HYPOCLINEA) REFLEXUS n.sp.

Figs. 13 & 13a.

Worker. Length: 4-4.3 mm.

Red. Mandibles, antennae, legs and gaster testaceous; on some examples there are two dark bands on the gaster. Eyes black, funiculus brown.

Shining. Head, thorax and node coarsely punctate, with a fine reticulation between the punctures. Gaster microscopically punctate.

Hair yellow, long and erect, abundant throughout, shorter on the antennae and legs. No pubescence apparent.

Head slightly longer than broad, strongly convex behind and on the sides. Frontal carinae diverging behind, slightly longer than their distance apart. Clypeus convex above, the anterior border convex, with a distinct concave excision in the middle. Eyes globular, placed at the middle of the sides. Scapes extending beyond the occipital border by one-fourth of their length; first segment of the funiculus one-fifth longer than the second, third slightly shorter than the second. Thorax one and two-thirds times longer than broad. Pronotum twice as broad as long, convex in front, the anterior angles bluntly produced, the dorsum feebly concave in the middle. Mesonotum convex above. Epinotum one and a third times longer than broad, convex laterally, the posterior border short and excised in the middle, appearing slightly bilobed; in profile very strongly convex above, dome-shaped, overhanging the declivity by half its length, the declivity short, strongly concave, the superior border margined, the sides submargined. Node fully twice as broad as long, in front it is feebly, behind strongly, convex, the dorsum convex laterally. Gaster longer than broad, concave in front below. Legs robust.

Hab.: South Australia: Murray Bridge, Mount Lofty (A. H. Elston).

Apparently near *D. turneri* Forel, but the formation of the head readily separate them.

DOLICHODERUS (*HYPOCLINEA*) *CLUSOR* Forel.

Figs. 18 & 18a.

Fauna, Sudwest. Aust., 1, p. 285, 1907, ♀.

Emery, Genera Insect., 137, p. 12, 1912, ♀.

Worker. Length: 3.8-4.3 mm.

Brownish-red. Head, except the clypeus, darker; mandibles and legs more yellowish-red, gaster black.

Subopaque, gaster shining. Head punctate-reticulate, the punctures large, shallow and scattered. Pronotum finely reticulate, with large shallow punctures. Mesonotum more coarsely punctate-reticulate. Epinotum finely rugose. Gaster microscopically reticulate.

Hair yellow, long and erect, abundant throughout, shorter and suberect on the antennae and legs.

Head longer than broad, the occipital border short and straight, the sides and angles strongly convex. Frontal carinae diverging slightly behind, as long as their distance apart. Clypeus convex above, the anterior border convex, with a distinct concave excision in the middle. Eyes large and convex, placed at the middle of the sides. Scapes extending beyond the occipital border by one-third of their length; first segment of the funiculus one-fourth longer than the second, third slightly shorter than the second. Mandibles smooth, with shallow scattered punctures, the masticatory with feeble denticles; the terminal border with ten to twelve sharp teeth. Thorax one and three-quarter times longer than broad, convex in front and on the sides, the angles bluntly rounded; flattened or feebly concave above. Mesonotum convex above. Epinotum one-third longer than broad, convex laterally, the posterior border convex; in profile strongly convex above, very slightly overhanging the declivity, the latter concave, margined on the sides and above. Node three times broader than long, feebly concave in front, convex behind and above. Gaster longer than broad, concave in front below. Legs robust.

Hab.: Western Australia: Fremantle, Perth, Armadale, Ludlow (J. Clark).

This species comes closest to *D. australis* Andre, from Victoria.

DOLICHODERUS (HYPOCLINEA) AUSTRALIS Andre.

Figs. 19 & 19a.

Rev. d'Ent., p. 105, 1896, ♀.

Emery, Genera Insect., 137, p. 12, 1912, ♀.

Worker. Length: 4.5-4.8 mm.

Head and gaster black, thorax and node red, mandibles, antennae and legs brownish-red, brown on some examples.

Subopaque. Gaster smooth and shining. Head very finely and densely punctate, with some large, very shallow, scattered punctures. Mandibles smooth with a few scattered punctures. Pronotum almost smooth, microscopically reticulate. Mesonotum and epinotum more distinctly reticulate, with a few large shallow punctures. Node reticulate above.

Hair yellow, long and erect, abundant throughout, shorter and suberect on the antennae and legs. No pubescence apparent.

Head one-fourth longer than broad, as broad in front as behind, the occipital border and sides convex. Frontal carinae diverging behind, slightly longer than their distance apart. Clypeus convex above, with a longitudinal groove in the middle, more apparent in front than behind, anterior border convex, with a deep excision in the middle. Eyes large and rather flattened. Scapes extending beyond the occipital border by fully one-third of their length; first segment of the funiculus one-fourth longer than the second. Masticatory border of the mandibles feebly denticulate; the terminal border with eleven sharp teeth. Thorax twice as long as broad. Pronotum one-fourth broader than long, flattened above, on some examples it is feebly concave longitudinally. Mesonotum convex above. Epinotum as long as broad, strongly convex laterally, the posterior border convex; in profile strongly convex, higher in front than behind, not, or very slightly, overhanging the declivity, the latter concave, as long as the dorsum. Node three times broader than long, the anterior face feebly, the dorsum and posterior face strongly, convex; in profile scale-like, the anterior face straight, the posterior strongly convex. Gaster longer than broad, concave in front below. Legs robust.

Hab.: Victoria: Ferntree Gully (F. P. Spry); Ringwood (F. E. Wilson); Warburton (L. B. Thorn); Maldon (J. C. Goudie).

DOLICHODERUS (HYPOCLINEA) PARVUS n.sp.

Figs. 16 & 16a.

Worker. Length: 3-3.2 mm.

Yellowish red, mandibles and antennae testaceous, legs clear yellow, gaster brown.

Shining. Head very finely reticulate. Mandibles smooth. Pronotum microscopically reticulate. Mesonotum reticulate, coarser than on the head. Epinotum and node rugose. Gaster shining, microscopically punctate.

Hair yellow, long and erect, abundant throughout, shorter on the antennae and legs. No pubescence apparent.

Head one-fifth longer than broad, the posterior border feebly, the sides strongly convex. Frontal carinae diverging behind, longer than their distance apart. Clypeus convex above, the anterior border convex, with a distinct excision in front. Eyes large and convex, occupying fully one-fourth of the sides of the head. Scapes extending beyond the occipital border by barely one-fourth of their length; first segment of the funiculus one-third longer than the second, third slightly longer than the second. Mandibles finely denticulate on the masticatory border; terminal border with ten large sharp teeth. Thorax twice as long as broad. Pronotum slightly broader than long, flattened above, convex in front and on the

sides. Mesonotum convex above. Epinotum as long as broad, the posterior border convex; in profile strongly convex longitudinally, not overhanging the declivity, the latter concave, barely as long as the dorsum. Node scale-like, four times broader than long, the anterior face straight, the dorsum and posterior face convex. Gaster longer than broad, concave in front below. Legs slender.

Hab.: Victoria: Sea Lake (J. C. Goudie).

A very distinct species, not near any other known.

DOLICHODERUS (HYPOCLINEA) GOUDIEI n.sp.

Figs. 17 & 17a.

Worker. Length: 3.6-4 mm.

Black. Mandibles, antennae and legs brown.

Subopaque. Head reticulate-punctate, the punctures large and scattered. Mandibles finely punctate. Pronotum smooth, microscopically punctate, with some large scattered punctures. Mesonotum finely rugose; epinotum coarsely so. Gaster densely and microscopically punctate.

Hair yellow, erect, moderately long and abundant throughout. Pubescence yellow, rather long and close lying, longer and more abundant on the gaster, where it forms a distinct clothing almost hiding the sculpture.

Head slightly longer than broad, the occipital border straight, or very feebly convex, the sides convex. Frontal carinae hardly diverging, a little longer than their distance apart. Clypeus convex above, with a deep longitudinal groove in the middle from the base to the anterior border, the latter convex, excised in the middle. Scapes extending beyond the occipital border by fully one-fourth of their length; first segment of the funiculus one-fifth longer than the second, the third slightly shorter than the second. Masticatory border of the mandibles with fine denticles; the terminal border with ten to twelve strong sharp teeth. Thorax barely twice as long as broad. Pronotum one-fourth broader than long, flattened above. Mesonotum convex above. Epinotum slightly longer than broad, convex; in profile the dorsum convex, dome-shaped, the declivity as long as the dorsum, concave towards the bottom, the slightly overhanging superior border and sides margined. Node four times broader than long; in profile scale-like, thick at the base and tapering to a blunt point above. Gaster feebly concave in front below. Legs robust.

Hab.: Victoria: Maldon (J. C. Goudie).

This species is readily distinguished from all others by the strongly pubescent gaster, colour, sculpture and thin node.

DOLICHODERUS (HYPOCLINEA) NIGRICORNIS n.sp.

Figs. 14 & 14a.

Worker. Length: 4-4.3 mm.

Bright red. Eyes and gaster black, antennae and legs brownish black, mandibles and clypeus yellowish red.

Subopaque, gaster shining. Head coarsely and irregularly punctate. Clypeus longitudinally striate, almost rugose. Pronotum rugose, but not coarsely so, with some large shallow punctures at the sides. Mesonotum and epinotum coarsely rugose. Gaster microscopically punctate.

Hair yellow, short and erect, abundant throughout, but a little longer and more numerous on the gaster. Pubescence not apparent.

Head one-sixth longer than broad, the occipital border feebly, the sides strongly convex. Frontal carinae slightly longer than their distance apart. Clypeus convex above, the anterior border convex, feebly indented

in the middle. Eyes small and convex. Scapes extending beyond the occipital border by one-third of their length; first segment of the funiculus one-fifth longer than the second, third as long as the second. Mandibles furnished with twelve sharp teeth. Thorax twice as long as broad. Pronotum almost twice as broad as long, the anterior border feebly convex, the angles bluntly rounded, the dorsum concave longitudinally; in profile flat above, the anterior face short and abrupt, the angles produced outward and forward. Mesonotum convex above. Epinotum longer than broad, convex laterally, the posterior border straight; in profile strongly convex longitudinally, overhanging the declivity, the latter strongly concave, one-third shorter than the dorsum, the superior border sharply margined. Node almost three times as broad as long, feebly concave in front, strongly convex above and behind. Gaster longer than broad, concave in front below. Legs long and robust.

Hab.: Western Australia: Tammin (J. Clark).

The produced angles of the pronotum readily distinguish this from all the other species.

DOLICHODERUS (HYPOCLINEA) FORMOSUS n.sp.

Figs. 15 & 15a.

Worker. Length: 4.5-5 mm.

Head and gaster black, mandibles and thorax red, antennae and legs brown, or reddish brown. On a few examples the head is blackish brown, the clypeus lighter.

Subopaque. Coxae, node and gaster smooth and shining. Head coarsely punctate and finely reticulate. Clypeus finely longitudinally striate. Thorax punctate-rugose and finely reticulate.

Hair yellow, erect, rather short, but abundant throughout, suberect on the antennae and legs. Pubescence not apparent.

Head longer than broad, as broad behind as in front, the occipital border feebly, the sides strongly, convex. Frontal carinae as long as their distance apart. Clypeus convex above, the anterior border convex, with a deeply excised concavity in the middle. Eyes large, convex, placed at the middle of the sides. Scapes extending beyond the occipital border by barely one-third of their length; first segment of the funiculus one-tenth longer than the second, the other subequal. Masticatory border of the mandibles feebly denticulate, terminal border with nine or ten strong sharp teeth. Thorax twice as long as broad. Pronotum one and two-third times broader than long, convex in front, the angles bluntly rounded, depressed, or feebly concave longitudinally above. Epinotum one and one-third times longer than broad, the posterior border convex; in profile strongly convex longitudinally, one-third longer than the declivity, the latter strongly concave. Node slender, three times as broad as long, the dorsum convex; in profile both faces convex toward the top, the latter bluntly pointed. Gaster longer than broad, feebly concave in front below. Legs robust.

Female. Length: 6.8 mm.

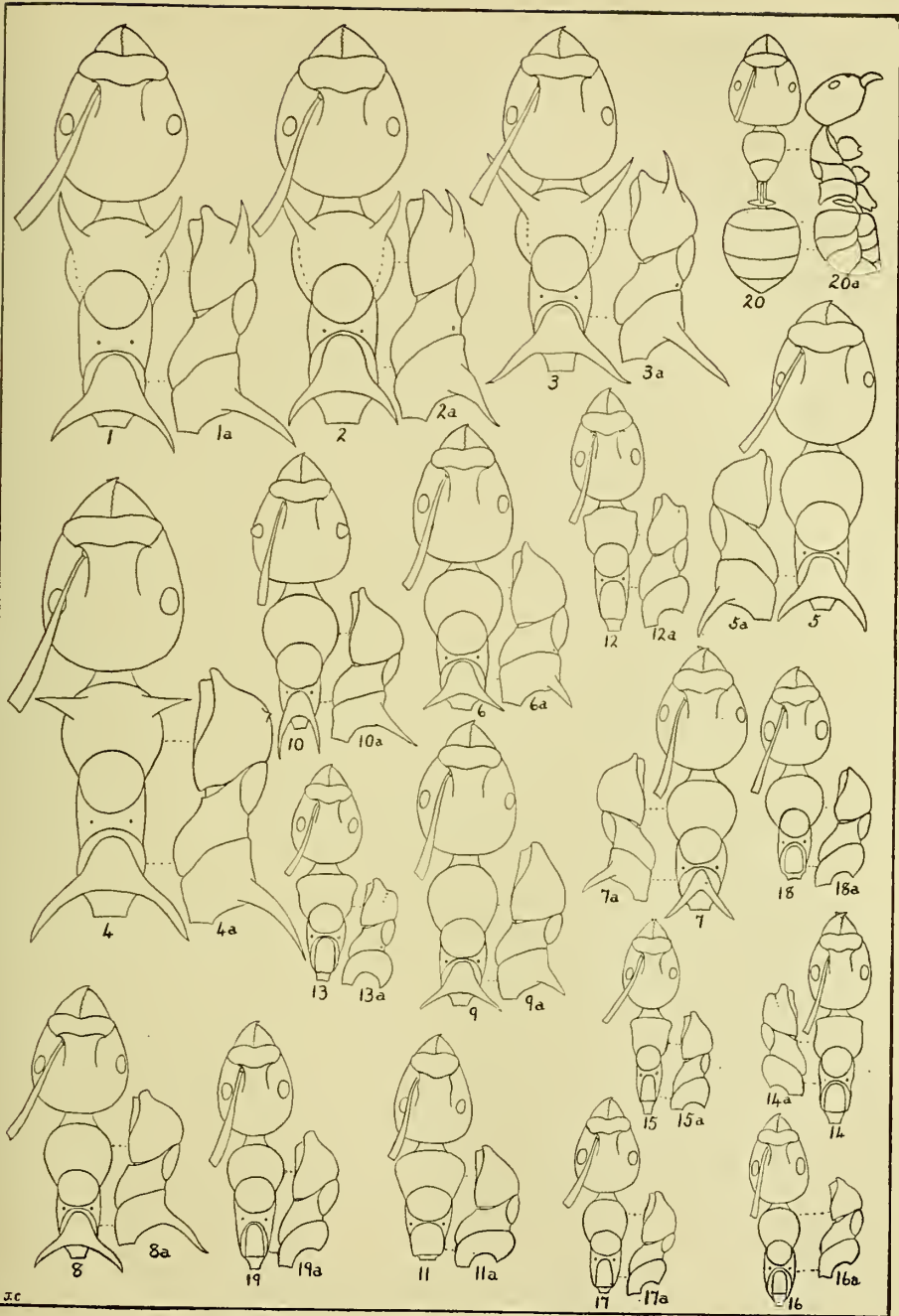
Similar to the worker, but much larger and winged. The colour is brighter. On the mesonotum there is a large black spot on the anterior margin and an elongate black spot on each side near the middle. The scutellum is smooth and shining, the gaster very finely and densely punctate. Wings missing.

Hab.: Western Australia: Armadale, Mundaring, Mount Dale (J. Clark).

Near *D. nigricornis*, but readily distinguished by the colour, sculpture, shape of the thorax and node.

EXPLANATION OF FIGURES.

1. *Dolichoderus* (*Hypoclinea*) *doriae* Emery. Dorsal view. a, profile of thorax.
2. *Dolichoderus* (*Hypoclinea*) *tristis* n.sp. Dorsal view. a, profile of thorax.
3. *Dolichoderus* (*Hypoclinea*) *dentata* Forel. Dorsal view. a, profile of thorax.
4. *Dolichoderus* (*Hypoclinea*) *extensispinosa* Forel. Dorsal view. a, profile of thorax.
5. *Dolichoderus* (*Hypoclinea*) *scabridus* Roger. Dorsal view. a, profile of thorax.
6. *Dolichoderus* (*Hypoclinea*) var. *rusticornis* Santschi. Dorsal view. a, profile of thorax.
7. *Dolichoderus* (*Hypoclinea*) *ypsilon* Forel. Dorsal view. a, profile of thorax.
8. *Dolichoderus* (*Hypoclinea*) var. *nigra* Crawley. Dorsal view. a, profile of thorax.
9. *Dolichoderus* (*Hypoclinea*) var. *rufotibialis* n.var. Dorsal view. a, profile of thorax.
10. *Dolichoderus* (*Hypoclinea*) *angusticornis* n.sp. Dorsal view. a, profile of thorax.
11. *Dolichoderus* (*Hypoclinea*) *scrobiculatus* Mayr. Dorsal view. a, profile of thorax.
12. *Dolichoderus* (*Hypoclinea*) *occidentalis* n.sp. Dorsal view. a, profile of thorax.
13. *Dolichoderus* (*Hypoclinea*) *reflexus* n.sp. Dorsal view. a, profile of thorax.
14. *Dolichoderus* (*Hypoclinea*) *nigricornis* n.sp. Dorsal view. a, profile of thorax.
15. *Dolichoderus* (*Hypoclinea*) *formosus* n.sp. Dorsal view. a, profile of thorax.
16. *Dolichoderus* (*Hypoclinea*) *parvus* n.sp. Dorsal view. a, profile of thorax.
17. *Dolichoderus* (*Hypoclinea*) *goudiei* n.sp. Dorsal view. a, profile of thorax.
18. *Dolichoderus* (*Hypoclinea*) *clusor* Forel. Dorsal view. a, profile of thorax.
19. *Dolichoderus* (*Hypoclinea*) *australis* Andre. Dorsal view. a, profile of thorax.
20. *Iridomyrmex* *flavipes* Kirby. Dorsal view. a, profile of thorax.



Australian Ants of the Genus *DOLICHODERUS*.

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DOLICHODERUS (HYPOCLINEA) OCCIDENTALIS n.sp.

Figs. 12 & 12a.

Worker. Length: 4.7-5 mm.

Black. Mandibles and legs brownish black.

Subopaque. Head and thorax coarsely punctate, slightly coarser on the thorax almost rugose. Mandibles finely punctate. Gaster microscopically punctate.

Hair yellow, erect, moderately long and abundant throughout. Pubescence very fine and adpressed on the gaster.

Head one-fifth longer than broad, the occipital border feebly, the sides strongly convex. Frontal carinae parallel, longer than their distance apart. Clypeus convex above, the anterior border convex, with a feeble excision in the middle. Eyes convex, placed at the middle of the sides. Scapes extending beyond the occipital border by one-third of their length; first segment of the funiculus slightly longer than the second, third as long as the second. Mandibles with ten to twelve sharp teeth. Thorax twice as long as broad. Pronotum one-fourth broader than long, the anterior angle very bluntly produced forward, forming a concavity in front. Mesonotum convex above. Epinotum one-third longer than broad; in profile strongly convex, the posterior border inclined slightly upward, overhanging the declivity, the latter shorter than the dorsum, margined above and on the sides. Node rather slender, three times as broad as long, feebly concave in front, convex above and behind. Gaster longer than broad, concave in front below. Legs long and robust.

Hab.: Western Australia: Albany (J. Clark).

Near *D. scrobiculatus* Mayr, but readily separated from it by the form of the pronotum and node. From *D. nigricornis*, it differs by the colour, pilosity and the form of the epinotum and node.

IRIDOMYRMEX FLAVIPES Kirby.

Figs. 20 & 20a.

Hypoclinea flavipes Kirby, Result Horn. Exped. Zool. Suppl. 1, p. 206, 1896, ♀; Froggatt, Cat. Aust. Ants. Agric. Gaz., p. 22, 1905, ♀.

Iridomyrmex rostrinotus Forel, Rev. Suisse Zool., 18, p. 53, 1910, ♀, ♂, ♀; Emery, Genera Insect., fasc., 137, p. 26, 1912; Crawley, Ann. Mag. Nat. Hist., 9, 16, p. 595, 1925, ♀.

The type of *Hypoclinea flavipes* Kirby, is in the collection of the National Museum. It has been compared with cotypes of *Iridomyrmex rostrinotus* Forel. They are identical.

The description given by Kirby for *H. flavipes* is not only useless, it is absurd.

The description of *I. rostrinotus* Forel, is very complete, but I may add that the colour of the legs varies from brown to yellowish red. I have given figures (20 and 20a) to supplement Forel's description. This figure is from the type of *flavipes*.

This ant has a very wide distribution throughout the central Australian region, being found wherever the Porcupine grass grows. It is known as the "Spinifex Ant."

The late Sir Baldwin Spencer gave a most interesting and complete account of this species in the Narrative of the Horn Expedition, Vol. 1, pp. 69-72, 1896.